

REMARKS

Introductory Remarks

Claims 37-47 are currently pending in the application, of which claims 37, 43, and 48 are independent claims.

In view of the following Remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending rejections for the reasons discussed below.

Rejections Under 35 U.S.C. §102

Claims 37-39, 42-45 stands rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,689,470 issued to Joseph ("Joseph"). Applicant respectfully traverses this rejection and requests reconsideration. As will be discussed below, the Examiner has confused "a carbide reactively bonded to the open-cell carbon foam" with free or existing carbide materials being added to a surface of carbon foam.

In order to anticipate a claim, the reference must teach each and every element of the claim. (*See* MPEP 2131.) Applicant respectfully submits that Joseph does not teach or disclose "a carbide reactively bonded to the open-cell carbon foam" as required by independent claims 37 and 43. Applicant's specification teaches that blending a carbide forming precursor with coal powder prior to the formation of carbon foam will react with the carbon from the coal powder during the carbon foam forming process to produce carbides that are reactively bonded to the carbon foam skeleton. For example the specification discloses:

'[c]arbide precursors' of the type useful in accordance with the present invention include but are not limited to such materials as silicon that forms silicon carbide, tungsten that forms tungsten carbide and titanium that forms titanium carbide during calcinations and graphitization as described herein. However, any material

capable of reacting with carbon during the calcinations and graphitization operation as described herein to form an abrasive carbide that is 'reaction bonded' to the carbon foam skeleton are suitable candidates for application in the abrasive carbon foams described herein.

Specification, page 5, lines 14-21.

The specification clearly defines what is meant by reaction bonded carbides and distinguishes these carbides that use carbon from the carbon foam structure with already formed free carbides that are added to the foam and remain in a state that is not reacted with carbon of the carbon foam structure. For example, the specification discloses:

'[r]eaction bonded' carbides comprise those carbides that are reactively bonded to the foam structure or skeleton during the foam, calcinations and graphitization processes, as opposed to similar carbide materials that might simply be added as a blend with the starting material coal and remain in their unreacted state as 'free' carbides (i.e. unbonded) in the final carbon foam product.

Specification, page 5, line 21 – page 6, line 3.

Applicant respectfully contends that Joseph does not disclose or suggest "a carbide reactively bonded to the open-cell carbon foam" as required by claims 37 and 43. Joseph discloses carbides that may be subsequently applied to a surface of the carbon as a protective layer. These carbides are the "free" carbides or unreacted carbides distinguished in the sections of the specification cited above. In particular the carbides referred to in Joseph are not reacted with carbon of the carbon foam skeleton during the carbon foam calcinations or graphitization process.

Accordingly, for the reasons discussed above, Applicant submits that Joseph does not disclose "a carbide reactively bonded to the open-cell carbon foam" as required by claims 37 and 43. Applicant respectfully submits that claims 37 and 43 and all the claims that depend

therefrom are not anticipated by Joseph and respectfully request withdrawal of the 35 U.S.C. § 102(e) rejection of claims 37-39, and 42-45.

Rejections Under 35 U.S.C. §103

Claims 48-50, and 52 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Joseph. Applicant respectfully traverses this rejection and requests reconsideration. As discussed above, the Examiner has confused “a metallic carbide reaction bonded to the porous coal-base structure” with free or existing carbide materials being added to a surface of carbon foam.

To establish a *prima facie* case of obviousness there must be some suggestion or motivation to modify the reference or to combine the references teachings, there must be a seasonable expectation of success, and the references when combined must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. (MPEP 2142). Applicant respectfully submits that Joseph does not teach or suggest all of the claim limitations and at least does not teach or suggest “a metallic carbide reaction bonded to the porous coal-base structure” as required by independent claim 48.

As discussed above “reaction bonded to the porous coal-base structure” is discussed in the specification and teaches that blending a carbide forming precursor with coal powder prior to the formation of carbon foam will react with the carbon from the coal powder during the carbon foam forming process to produce carbides that are reactively bonded to the carbon foam skeleton. See Specification, page 5, lines 14-21. Further, the specification clearly defines what

is meant by reaction bonded carbides and distinguishes these carbides that use carbon from the carbon foam structure with already formed free carbides that are added to the foam and remain in a state that is not reacted with carbon of the carbon foam structure. See, Specification, page 5, line 21 – page 6, line 3.

Applicant respectfully contends that Joseph does not disclose or suggest “a metallic carbide reaction bonded to the porous coal-base structure” as required by claim 48. Joseph discloses carbides that may be subsequently applied to a surface of the carbon as a protective layer. These carbides are the “free” carbides or unreacted carbides distinguished in the sections of the specification cited above. In particular the carbides referred to in Joseph are not reacted with carbon of the carbon foam skeleton during the carbon foam calcinations or graphitization process.

Accordingly, for the reasons discussed above, Applicant respectfully submits that Joseph does not teach or suggest all of the claim limitations and at least does not teach or suggest “a metallic carbide reaction bonded to the porous coal-base structure” as required by independent claim 48. Applicant respectfully submits that claims 48 and all the claims that depend therefrom are not obvious over Joseph and respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claims 48-50, and 52.

Claims 41, 47, and 53 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Joseph in view of Kuzurman. Applicant respectfully traverses this rejection and requests reconsideration. As discussed above, Applicant submits that Joseph does not disclose or teach “a carbide reactively bonded to the open-cell carbon foam” as required by dependant claims 41 and

47, and “a metallic carbide reaction bonded to the porous coal-base structure” as required by dependant claim 53. As with Joseph, Kuzurman fails to supply this missing limitation. Therefore, the combination of Joseph in view of Kuzurman fails to disclose all the limitations of claims 41, 47, and 53. Since the combination of Joseph and Kuzurman does not disclose all the limitations of claims 41, 47, and 53, Applicant respectfully submits that the combination of Joseph in view of Kuzurman fails to establish a *prima facie* case of obviousness and respectfully requests withdrawal of the 35 U.S.C. § 103(a) rejection of claims 41, 47, and 53.

Claims 40, 46, and 51 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Joseph in view of Googin. Applicant respectfully traverses this rejection and requests reconsideration. As discussed above, Applicant submits that Joseph does not disclose or teach “a carbide reactively bonded to the open-cell carbon foam” as required by dependant claims 40 and 46, and “a metallic carbide reaction bonded to the porous coal-base structure” as required by dependant claim 51. As with Joseph, Googin fails to supply this missing limitation. Therefore, the combination of Joseph in view of Googin fails to disclose all the limitations of claims 40, 46, and 51. Since the combination of Joseph and Googin does not disclose all the limitations of claims 40, 46, and 51, Applicant respectfully submits that the combination of Joseph in view of Googin fails to establish a *prima facie* case of obviousness and respectfully requests withdrawal of the 35 U.S.C. § 103(a) rejection of claims 40, 46, and 51.

Extension of Time

A Petition for a three (3)-month extension of time under 37 C.F.R. §1.136(a) is filed herewith. It is not believed that any further extensions of time are required other than those in the accompanying Petition. If extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned for under 37 C.F.R. §1.136(a). Applicants believe that no further fees for net addition of claims are required at this time. Applicants submit a fee in the amount of \$510 for the three month extension of time fee. Any further fees required for extensions of time and any fees for the net addition of claims are hereby authorized to be charged to our Deposit Account No. 503310.

Conclusion

Applicant believes that a full and complete response has been made to the pending Office Action and respectfully submits that all of the stated objections and grounds for rejection have been overcome or rendered moot. Should the Examiner feel that there are any issues outstanding after consideration of this Reply, the Examiner is invited to contact the Applicant's undersigned representative at the number below to expedite prosecution. Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,



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Date: October 2, 2007

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